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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LY, NGHI H

ART UNIT PAPER NUMBER

2617

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/786,597

Applicant(s)

NIEMELA ET AL.

Examiner

Nghi H. Ly

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-15 and 19 is/are rejected.
- 7) ☒ Claim(s) 8-10 and 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

Art Unit: 2617

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 11/13/06 have been fully considered but they are not persuasive.

On page 13 of applicant's remarks, applicant argues that Raleigh and Andreasson do not teach or suggest the combination of elements recited in any of the pending claims 1, 11 and 19.

In response, the combination of Raleigh and Andreasson does indeed teach applicant's claims 1, 11 and 19. In addition, applicant's attention is directed to the teaching of Raleigh and Andreasson in claims 1, 11 and 19.

On pages 13, 14, 15 and 16 of applicant's remarks, applicant further argues that Raleigh does not teach a tunable diplexer, especially a diplexer that is electronically tunable.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Andreasson (not Raleigh) teaches a tunable diplexer (see column 1, lines 30-33, see "tuned", and see column 3, lines 45-58), especially a diplexer that is electronically tunable (see column 1, lines 30-33, see "tuned", and see column 3, lines

Art Unit: 2617

45-58) and a tuning range of the electronically tunable diplexer covers at least two radio frequency sub-bands used parallel in a telecommunication system (see column 1, lines 30-33, see "tuned", see column 3, lines 45-58, and column 4, line 64 to column line 8, see "Rx" and "Tx" bands).

On page 14 of applicant's remarks, applicant argues that figure 3 of Raleigh illustrates that the down-converter 112 and the up-converter 160 are not connected to an electronically tunable diplexer.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *the down-converter 112 and the up-converter 160 are connected to an electronically tunable diplexer*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

On page 15 of applicant's remarks, applicant argues that Raleigh does not disclose that at least a portion of the signal conversion chain is shared between frequencies within the tuning range.

In response, Raleigh does indeed teach at least a portion of the signal conversion chain is shared between frequencies within the tuning range (see column 5, lines 24-26, see "the receive and transmit frequencies", the teaching of Raleigh does indeed teach applicant's "tuning", and column 8, lines 43-46, see "*different uplink and down link frequencies*", see column 8, lines 22-51, and see column 11, lines 26-37. In

this case, Raleigh's "*different uplink and down link frequencies*" and they read on applicant's "shared between frequencies").

On page 15 of applicant's remarks, applicant argues that Andreasson fails to disclose an electronically tunable diplexer that is tunable on site to a radio frequency sub-band allocated to a base station.

In response, Raleigh (not Andreasson) teaches an electronically tunable diplexer that is tunable on site to a radio frequency sub-band allocated to a base station (see column 3, lines 33-55 and column 5, lines 5-8).

On page 16 of applicant's remarks, applicant argues that Andreasson fails to suggest of tuning a diplexer electronically.

In response, Andreasson does indeed teach tuning a diplexer electronically (see Abstract, column 1, lines 30-33, where Andreasson teaches tuning a diplexer electronically. In addition, applicant's claims fail to further define how a diplexer can be tuned electronically. Therefore, Andreasson indeed teaches applicant's claimed limitation with broadest reasonable interpretation).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-7, 11-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raleigh et al (US 6,101,399) in view of Andreasson et al (US 5,963,854).

Regarding claims 1, 11 and 19, Raleigh teaches a base station of a cellular telecommunication system (see Abstract and fig.2A), comprising: an antenna unit configured to receive and transmit radio frequency signals (see fig.2A, antenna 56, box 52 and box 54), an electronically diplexer connected to the antenna unit configured to separate a transmit radio frequency band from a receive radio frequency band (see fig.2A, diplexer 58, column 3, lines 49-55 and column 5, lines 5-8), a range of the electronically diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system (see column 5, lines 24-26 and column 8, lines 43-46, see "*different uplink and down link frequencies*"), the electronically diplexer, on site, to a radio frequency subband allocated to a base station (see column 3, lines 33-55), a

Art Unit: 2617

transceiver connected to the electronically diplexer configured to perform a conversion between a fixed frequency band and the radio frequency sub-band allocated to the base station (see fig.3, boxes 112, "*complex downconverter*" and 160, "*complex upconverter*"), and wherein the transceiver includes a signal conversion chain configured to perform at least a portion of the conversion (see column 23, lines 1-17 and (see fig.3, boxes 112, "*complex downconverter*" and 160, "*complex upconverter*"), at least a portion of the signal conversion chain being shared between frequencies (see column 5, lines 24-26 and column 8, lines 43-46, see "*different uplink and down link frequencies*", see column 8, lines 22-51 and see column 11, lines 26-37).

Raleigh does not specifically disclose a tuning range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system a range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system, the electronically tunable diplexer being tunable, on site, to a radio frequency subband allocated to a base station, and at least a portion of the signal chain being shared between frequencies within the tuning range.

Andreasson teaches a tuning range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system a range of the electronically tunable diplexer covering at least two radio frequency sub-bands used parallel in a telecommunication system (see Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), the electronically tunable diplexer being tunable, on site, to a radio frequency subband allocated to a

Art Unit: 2617

base station (see Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), and at least a portion of the signal chain being shared between frequencies within the tuning range (also see column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Andreasson into the system of Raleigh in order to provide an improved antenna amplifier (see column 1, lines 40-42).

Regarding claims 2 and 12, the combination of Raleigh and Andreasson further teaches the electronically tunable diplexer is configured to operate in a receive tuning range covering receive sub-bands of at least two system bands, the electronically tunable diplexer being tunable (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), on site, to a receive sub-band allocated to the base station (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

Regarding claims 3 and 13, the combination of Raleigh and Andreasson further teaches the electronically tunable diplexer is configured to operate in a transmit tuning range covering transmit sub-bands of at least two system bands (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), the electronically tunable diplexer being tunable (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), on site, to a transmit sub-band allocated to the base station (also see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8).



Art Unit: 2617

Regarding claims 4 and 14, the combination of Raleigh and Andreasson further teaches the electronically tunable diplexer is configured to operate in a receive tuning range covering at least two receive sub-bands of a system band, the electronically tunable diplexer being tunable (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), during operation, to a receive sub-band allocated to the base station (also see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

Regarding claims 5 and 15, the combination of Raleigh and Andreasson further teaches the electronically tunable diplexer is configured to operate in a transmit tuning range covering at least two transmit sub-bands of a system band, the electronically tunable diplexer being tunable (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8), during operation, to a transmit sub-band allocated to the base station (also see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

Regarding claim 6, the combination of Raleigh and Andreasson further teaches the electronically tunable diplexer is tunable, on site, to provide a passband narrower than a system band allocated to the base station (see Andreasson, Abstract, column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

Regarding claim 7, the combination of Raleigh and Andreasson further teaches a control unit connected to the electronically tunable diplexer and the transceiver for controlling frequency characteristics of the base station (see Andreasson, Abstract,

column 3, lines 45-58 and column 4, line 64 to column 5, line 8).

***Allowable Subject Matter***

5. Claims 8-10 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 8-10 and 16-18 are objected for the reasons as stated in the previous Office action (pages 5-6, dated 11/15/05)

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2617

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (571) 272-7911. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on (571) 272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nghi H. Ly

